WHAT IS CLAIMED IS:

1. An isolated soluble Apo-2 ligand polypeptide comprising amino acid residues 91-281 of Figure 1A.

2. The Apo-2 ligand polypeptide of claim 1 comprising amino acid residues 92-281 of Figure 1A.

3. An isolated soluble Apo-2 ligand polypeptide consisting of amino acid residues 91-281 of Figure 1A.

4. An isolated Apo-2 ligand polypeptide having at least about 80% amino acid sequence identity with the Apo-2 ligand polypeptide of claim 1.

5. The Apo-2 ligand polypeptide of claim 4 wherein said polypeptide has at least about 90% amino acid sequence identity.

6. The Apo-2 ligand polypeptide of claim 5 wherein said polypeptide has at least about 95% amino acid sequence identity.

7. The Apo-2 ligand polypeptide of claim 1 wherein said polypeptide is linked to a nonproteinaceous polymer.

8. The Apo-2 ligand polypeptide of claim 7 wherein said nonproteinaceous polymer is polyethylene glycol.

9. A chimeric polypeptide comprising the Apo-2 ligand polypeptide of claim 1 fused to a heterologous polypeptide sequence.

10. The chimeric polypeptide of claim 9 wherein said heterologous polypeptide sequence is a tag polypeptide sequence.

11. An isolated nucleic acid comprising DNA encoding the Apo-2 ligand polypeptide of claim 1.

12. A vector comprising the nucleic acid of claim 11.

13. A host cell comprising the vector of claim 12.

14. The host cell of claim 13 wherein said host cell comprises a CHO cell.

15. The host cell of claim 13 wherein said host cell comprises *E. coli*.

16. The host cell of claim 13 wherein said host cell comprises a yeast cell.

17. A method of producing Apo-2 ligand polypeptide comprising culturing the host cell of claim 13 and recovering the Apo-2 ligand polypeptide from the host cell culture.

18. A composition comprising the Apo-2 ligand polypeptide of claim 1 and a carrier.

19. A composition useful for stimulating mammalian cell apoptosis comprising an effective amount of the Apo-2 ligand polypeptide of claim 1 in a pharmaceutically-acceptable carrier.

20. A method of inducing apoptosis in mammalian cancer cells comprising exposing mammalian cancer cells to an effective amount of the Apo-2 ligand polypeptide of claim 1.

21. The method of claim 20 wherein said Apo-2 ligand polypeptide is administered by infusion to a mammal diagnosed as having cancer.

ADD A1